Search for scission neutrons in the thermal fission of U-235 and Pu-239.

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The number and energies of the neutron emitted in the in the thermal neutron induced fission of Pu-239 and U-235 have been measured as a function of the fragment energy and the angle between fragment direction and direction of the neutron emission. A cylindrical double gridded ionization chamber has been used for fixation of the fission event and measurements of emission angles of fission fragments with respect to the target plane. Neutron energy has been measured using time-of-flight method with 12 neutron detectors spherically surrounded the fission chamber. A neutron angular distribution has been measured relative to Cf-252 in two ways - using fixation of the fragment emission angle close to the normal to the fissile target plane and neutron registration by full set of detectors and the second one - using of two neutron detectors located along the axis of the fission chamber and registration of the all emission angles of fragments with respect to the normal of the target. Such an analysis of the experimental data has to provide a reduction of the systematical uncertainties in order to search the deviation in the neutron angular distribution obtained from those specific for the assumption that all neutrons are emitted from fully accelerated fragments. Being found such a deviation could mean a presence of the scission neutrons. The knowledge about the scission neutron is very important for better understanding of fission dynamics, as well as for more reliable evaluation of the fission prompt neutron spectra.

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